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Proposal for Agricultural Water Pricing Adjustments

Agricultural Resource Management Division

Irrigation Systems Program

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1 Introduction

The purpose of this report is to examine the current financial state of the Department of Agriculture's (DOA) Irrigation Systems Program (Program) to determine if water related rate increases are required and to develop an appropriate rate structure if it is determined that increased rates are necessary.

The selection of appropriate rates involves tradeoffs among conflicting goals of revenue adequacy, equity, and program objectives. Rates that are perceived as fair may not generate adequate revenues, whereas, rates that generate sufficient revenue may oppose departmental objectives to stimulate agricultural development and commerce. These factors must be carefully considered within the context of basic rate making objectives and the tradeoffs among them. This study attempts to examine these issues to arrive at a rate structure proposal that is adequate in generating enough revenue for the program to be self-sufficient, yet is consistent with departmental objectives and fair to the users ultimately affected by these changes.

2 General Information

2.1 History of the State Irrigation Program

The Hawaii Irrigation Authority, created in July of 1953, was established to further agricultural development in the State by providing irrigation water for small-scale farming and overall agricultural production. Later renamed the Hawaii Water Authority (HWA), it served as program policy maker and overall administrator until it was abolished in 1961. After the HWA's abolishment, the program was transferred to the Department of Land and Natural Resources (DLNR).

In 1989, the legislature transferred the program to the DOA, Agricultural Resource Management Division (ARMD). The transfer was done to consolidate agricultural resource functions within the DOA to maximize the development of state-owned agricultural resources. The function of the ARMD is summarized in its current statement of objectives: "To assist in developing and managing the State's agricultural resources by ensuring adequate and reliable supplies of irrigation water, farmland, infrastructure, and produce processing facilities."

2.2 The Irrigation Systems

The Program under ARMD consists of five independently operated irrigation systems. General information about each system is summarized below:

	Waimea	Waimanalo	Molokai	Honokaa-Paauilo**	Kahuku
Tunnels, Ditches, Pipeline, Flumes (miles)	14.5	17.5	32.6	24.5	4
Farms Served	117	162	256	101* (Ag) 69* (Pasture)	23
Farm Land Supported (acres)	613	1,153	3,102	791* (Ag) 6,820* (Pasture)	161
Approximate Gallons Served in FY 2003 (thousands)	378,703	183,772	1,203,102	10,002* (Ag)	39,408

* Estimate for FY 2004 based on first four months of FY 2004.
** The Honokaa-Paauilo System started service in FY 2004.

The Program can be compared to a public utility. On the cost side, the commodity conveyed by the irrigation system (non-potable water) is free from nature. There is no cost for the commodity itself. However, the infrastructure required to deliver the commodity bears perpetual operation and maintenance costs regardless of how much of the commodity is actually delivered. Like any other type of public infrastructure, the irrigation systems will fall into disrepair if not properly maintained. Furthermore, the infrastructure of the irrigation system is highly susceptible to damage from unpredictable weather events such as storms, floods, landslides, etc.

On the revenue side of the Program, the supply of water is dependant on rainfall. In times of drought, the supply of water is low and thus revenues are correspondingly low. In times of abundant rain, the consumption of irrigation water may be limited to the needs of farmers as dictated by market conditions. Nevertheless, it is important to understand that revenues for the Program are not consistent due to weather and economic forces, while expenses are generally consistent with a gradual upward trend due to O & M costs and collective bargaining.

2.3 Current Rate Structure

The current Program rate structure consists of acreage assessments and a water delivery fee. Acreage assessments are tied to the land area of an irrigation customer and are generally fixed on an annual basis. These assessments are intended to cover a fixed percentage of the operation and maintenance costs and should be adjusted annually. The water delivery fee is a variable revenue source tied to actual water usage. The water delivery fee is relied upon to fund all other expenses associated with the program, while at the same time discouraging wasteful water usage. The purpose of the two-tier structure is to maintain a combination of fixed and variable charges.

2.3.1 Acreage Assessments

- Defined as levies on agricultural lands within an irrigation project for the purpose of acquiring, establishing, and/or maintaining irrigation facilities and capabilities.

- Acreage is broken down into two main categories, pastureland for livestock grazing, and agriculture for all other uses.

- Agricultural acreage is charged at different rates depending on the irrigation system. For fiscal year 2004, agricultural acreage assessments ranged from $1.20 to $3.75 per acre per month.

- Pastureland acreage applies only to the Honokaa-Paauilo irrigation system and was assessed at $0.16 an acre for fiscal year 2004.

- Acreage assessments are charged to all farms that are a part of the irrigation system irrespective of whether or not they choose to draw water from the system. The minimum acreage assessment is for two acres per month, which usually applies to those who choose not to draw water from the system but wish to remain within the irrigation district with the option to draw water in the future.

2.3.2 Water Charges

- Defined as charges established by the Board of Agriculture for irrigation water supplied. Water rates are broken down into two classes, agriculture (and diversified agriculture) and livestock watering.

- The current agriculture water rates are $0.315 per thousand gallons of irrigation water for Waimea, Waimanalo, and Molokai, $0.32 for Kahuku, and $0.25 for Honokaa-Paauilo.

- The current livestock water rate is $0.16 per head of livestock per month and only applies to eligible customers of the Honokaa-Paauilo irrigation system.

2.4 Water Rate Increase of 1999

In 1999, ARMD was allowed to increase water rates for the first time since 1990. In 1999, a water toll surcharge of $0.035 per thousand gallons was added to the existing water tolls at the Waimea, Waimanalo, and Molokai irrigation systems, and the water rates for these systems were allowed to rise $0.02 per thousand gallons per year starting from the $0.16 a year toll in 1999 until 2006 when the total water rate (including the water surcharge) will be $0.335 per thousand gallons. In fiscal year 2007, the water toll surcharge will expire and thus the total water toll rate will actually decrease down to $0.30 per thousand gallons and will stay there in perpetuity. Since 1999, two new irrigation systems have been added to the Program. Kahuku was added in 2000 and has a fixed rate of $0.32 per thousand gallons. Honokaa-Paauilo started operation in fiscal year 2004 and has a fixed rate of $0.25 per thousand gallons of irrigation water. See Appendix A for a table of water toll rates.

Acreage rates have been adjusted since 1999, but only modestly. Acreage rates for Waimea, Waimanalo, and Molokai were adjusted only once, by $0.10 an acre. This one-time $0.10 increase is in effect from 2000 through 2006. In fiscal year 2007 the acreage rates will go back to what they were in 1999, the same acreage rates that have been in effect for nearly 50 years when the Hawaii Irrigation Authority was established in 1953.

2.5 Irrigation Systems Revolving Fund

Fees charged for acreage assessments and water charges are collected and deposited in the Irrigation Systems Revolving Fund. The fund was established to provide for the operating, maintenance, and administrative requirements of the Program.

Since current fees do not cover these requirements, the revolving fund has been supplemented by the State general fund for several years. General funds have been appropriated to supplement Program expenses, accounting for approximately 20% of total operating expenses.

3 Study Methodology

The basic methodology used in this study to determine financial requirements and an appropriate rate structure is as follows:

- Using historical data on the Program's operating costs, project future operating costs with respect to historical precedents and additional projected expenditures based on filling immediate, critical needs and operating the organization in a professional manner.

- Assess all revenue generating sources by projecting future growth of these sources (i.e., chargeable acreage and water consumption) and then developing a rate structure that will generate sufficient revenue to balance projected expenses over a reasonable amount of time.

- Examine revenue related issues both supporting and opposing rate increases such as legislative intent, the current state of the Program, Program objectives, and impact on farmers.

4 Revenue Requirements

4.1 Revenue Requirements – Cash Balance Approach

The cash balance approach was used to determine the program's revenue requirements for this study. The basic objective of the cash balance method is to use the program's projected operating costs as a basis to determine projected revenue needs.

The cash balance basis is a straightforward approach that tallies all operating, maintenance, and administrative expenses not related to capital improvement projects. Capital Improvement Projects (CIP) are funded by general obligation bonds and may be co-funded by grants from the federal government. General obligation bonds are currently not re-paid by the program.

4.2 Financial Projections

Projections of system revenues and expenditures, based on the current rate structure, were made for a 8-year period beginning with fiscal year 2004 and ending with fiscal year 2011.

4.2.1 Revenue Projections

Revenue projections are based on historical data of system usage, adjusted for the following factors:

- Acreage Assessments. The growth in acreage assessments for the Program is expected to be flat except for the Honokaa-Paauilo Irrigation System, the latest addition to the Program. The Honokaa-Paauilo Irrigation System started collecting fees in fiscal year 2004. The starting point for Honokaa-Paauilo agricultural acreage comes from the average chargeable acreage from its first year of operation (fiscal year 2004). From here the agricultural acreage of the Honokaa-Paauilo Irrigation System is expected to grow 10% annually until it reaches about 60% of its 2,500 acre capacity in FY 2011. All other acreage within the Program is expected to remain stable with essentially 0% growth, as most of the other systems are established and mature. With acreage projections in place, acreage assessment revenues are obtained by multiplying acreage projections with corresponding, projected acreage rates. The annual sum of the revenue projections from the individual irrigation systems, minus a historically based provision for payment defaults, gives the acreage assessment revenue projection.

- Water Charges. Due to the recent drought, water consumption has been erratic over the last six years and actually shows a downward trend from 1998 to 2003. Nevertheless, water consumption is expected to increase for all systems by 2% a year annually from 2003 levels. Because Honokaa-Paauilo is a new system, its water consumption is projected to grow rapidly through 2011. Consumption projections from each irrigation system are multiplied by the projected water toll charges for each respective system to obtain revenue. The sum of water revenues from all systems, minus a historically based provision for payment delinquencies, yields the consolidated revenue projections for the water delivery fees.

4.2.2 Expenditure Projections

- Program Expenditures. Because operations and maintenance costs are largely independent from actual water consumption, program expenditures from 1998 through 2003 show a steady growth trend, except for a one-time expenditure spike in fiscal year 2001 (caused by a pre-payment on an O&M contract). Since the growth trend is relatively steady, expenditure projections for future years were calculated along the trend line created by plotting the last six years worth of expenditure level data. Since the Program has been operating under sub-standard and declining conditions over the last six years, additional amounts were added to the trend line representing a one-time charge for immediate, critical Program needs and increased annual operational costs necessary to create and maintain the organization in a professional manner. For a list of these immediate (first year) and additional annual needs (all subsequent years), see Appendix B. Finally, an annual inflation rate of 3% was added to final total expenditure projections.

- Debt Service. The Program does not service the debt of any general obligation bonds that are used for capital improvement projects.

4.3 Operating Revenue Scenarios

Two revenue scenarios were developed, one that maintains the status quo of required general fund subsidies, and the other that achieves 100% self-sufficiency. The revenue scenarios are as follows:

4.3.1 Scenario A – Maintain the Existing General Fund Subsidy

The program currently requests an annual general fund subsidy. However, this subsidy is not guaranteed and in spite of the implementation of severe cost saving measures, including a staff reduction of 33%, from 18 program personnel to 12 from 1998 to 2004, program expenditures continue to exceed revenues generated. Moreover, Program expenditures vary from year to year due to unforeseen operations and maintenance expenses and revenue instability caused by drought and general economic conditions. Even with the 1999 water toll rate increase, Program revenues were still not sufficient enough to cover operating costs. The results were continued net operating income deficits that drained cash from the Program's operating account.

The Program currently expects to exhaust all of its operating cash at the end of fiscal year 2005. Operating cash is vital to the operation of the Program due to the unpredictable nature of operating and maintaining a mostly aged capital infrastructure. At the current level of operating budget deficits, the Program would not last a single fiscal year without a general fund. Because this scenario does not create a self-sustaining operation, it will not be investigated further in this report.

4.3.2 Scenario B – Self-Sufficiency to Cover Operations and Maintenance Costs

This scenario involves the elimination of the general fund subsidy altogether by increasing water and acreage rates to balance the program's operating, maintenance, and administrative costs with increased revenue. Rate increases are not intended to cover future CIP. CIP will continue to be paid for by general obligation bond funds and not program operating revenue.

5 Issues for Rate Increases

5.1 Depletion of Revolving Fund

The first and foremost issue that requires consideration is the depletion of the revolving fund. Even with the general fund subsidy, program expenditures continue to exceed revenues, resulting in a projected depletion of operating funds by the end of fiscal year 2005. As a result, the Program will risk severe cutbacks or possible termination if additional revenue is not generated. If this occurs, farmers will have to switch to substantially more expensive county water systems or may lose the ability to irrigate altogether (See Appendix C for comparative county water toll rates).

5.2 Legislative Intent

Legislative intent states that the purpose of the Program is to facilitate the development of agriculture in the State of Hawaii. It also states that rates charged for irrigation services should be sufficient to cover the expenses of the Program. The following provision within the irrigation program statute, expresses the legislative intent regarding the financial sufficiency of irrigation systems:

> Section 167-11, Hawaii Revised Statutes (HRS), Relating to Irrigation Water Development, states that "The Board of Agriculture shall have the power to fix and adjust rates and charges for the furnishing of irrigation or domestic water service so that the revenues derived therefrom may be sufficient to cover the cost of operation, maintenance, and replacement and may make such charges as may be necessary to

cover the capital costs of the system or other costs incurred in connection with such system."

5.3 Legislative Auditor's Review and the Irrigation Revolving Fund

The Legislative Auditor's "Report on Special and Revolving Funds" conducted in 1990 and a subsequent report, "Financial Audit of the Department of Agriculture" conducted in 1994 both concluded that the Irrigation Revolving Fund should be repealed due to the lack of self-sufficiency. As mentioned previously, the revolving fund is the primary source of operating funds for the Program.

The Legislative Auditor used criteria, established by Act 240, SLH 1990, to determine whether a revolving fund should be continued, modified or repealed. The criteria are as follows:

- Continues to serve the purpose for which it was originally created; and
- Reflects a clear link between the benefits sought and charges made upon the users or beneficiaries of the program.

Act 240 allows other criteria to be applied as appropriate; therefore, the Legislative Auditor added a 3rd criterion:

- Demonstrates the capacity to be self-sustaining.

The Legislative Auditor established that the revolving fund met the first two criteria, however, the inability to meet the third, self-sufficiency, led to a recommendation to repeal the fund. As a result, there have been repeated inquiries made on the financial sufficiency of the Program and the feasibility of eliminating the revolving fund.

The DOA responded to these recommendations and inquiries by stating that the revolving fund should be maintained due to ongoing efforts to reduce general fund operating cost subsidies for the Program. The DOA did concede, however, that the revolving fund could not practically support debt service obligations for major CIP projects. Despite the recognized inability to pay for CIP debt service, the DOA has been allowed to keep this fund in the interim, on the condition that efforts to achieve self-sufficiency continue.

Should the revolving fund be repealed, the Program will become entirely general funded, leaving the Program without a means to address unforeseen, time-sensitive problems, such as emergency system repairs, droughts, etc. (the impact of relying on the general fund is further discussed in the next section).

Should the Program remain a revolving fund and at any point the general fund appropriation becomes inadequate or, in the worst case, ceases, irrigation services will likely be severely cut back or terminated.

Since this Legislative audit, DOA has kept the revolving fund and has taken dramatic steps to keep its commitment to achieve program self-sufficiency. Unfortunately, the Program was not able to raise water rates enough to cover the costs associated with the Program. As a result, the Program made massive cutbacks to its expenses in an attempt to further slow the financial losses.

5.4 Degradation of the Program Due to Under Funding

5.4.1 Chargeable Acreage

From 1998 to 2003, the amount of agricultural acreage managed by the Program grew by 3.2% to 5,029 acres at the end of fiscal year 2003. This figure was due mostly to the addition of the Kahuku Agricultural Park Irrigation System in 2000, and the steady increase of chargeable acreage at the Waimea Irrigation System. In July of 2003, the Honokaa-Paauilo Irrigation System began assessing fees to an initial 757 acres of agricultural land. At the end of fiscal year 2004, the addition of the Honokaa-Paauilo Irrigation System represented a system-wide increase in agricultural acreage of 15.4%, as shown in Figure 1. Furthermore, the Honokaa-Paauilo Irrigation System added another 6,589 acres to the system as pastureland. While the amount of pastureland is more than all system-wide agricultural acreage combined, it does not generate proportionate revenue as its fiscal year 2004 acreage assessment rate was $0.16 per acre per month, which is only 6.4% of the average agricultural acreage rate of $2.48 an acre. Chargeable acreage growth for the foreseeable future is projected to be flat for all systems except for agricultural acreage at the newly operational Honokaa-Paauilo Irrigation System. Figure 1 also shows where new irrigation systems began operation in fiscal years 2000 (Kahuku) and 2004 (Honokaa-Paauilo).

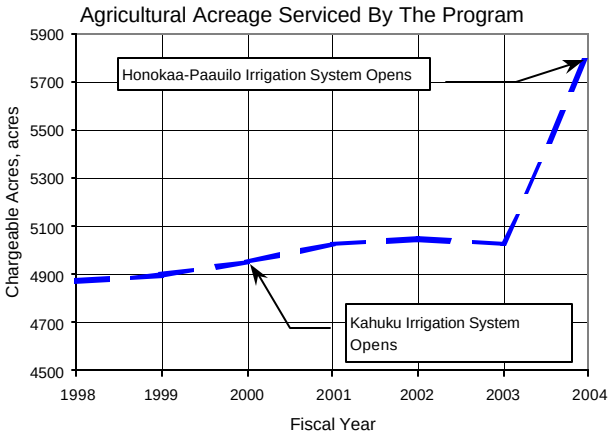


Figure 1. Agricultural acreage serviced by the Irrigation Program. This graph does not include pastureland acreage.

5.4.2 Staffing

In fiscal year 2001, the Program had a Reduction In Force (RIF) of 38% to cut costs (see Figure 2). From 1998, the total staffing of the Program has declined. Starting with 18 employees at the end of fiscal year 1998, the Program ended fiscal year 2004 with 12 employees, a loss of 33%. However, two out of the 12 existing employees are contractors working under an O&M contract that costs the Program over $200,000 annually. The 2001 RIF, in conjunction with the inability of the Program to pay a competitive wage, and the constant financial uncertainty of the Program, has led to higher

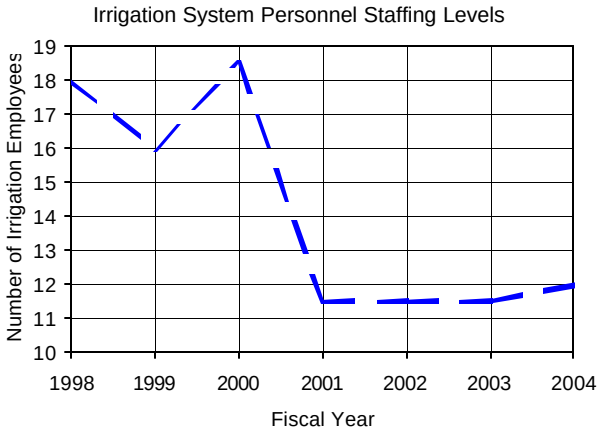


Figure 2. Program staffing levels.

turnover rates at the various Program irrigation districts. These high rates of turnover have left Program's field operations with high percentages of inexperienced workers. At the end of fiscal year 2004, the Program was down to 8 employees, 2 contractors, and 2, 89-day, emergency hires.

Routine repair and maintenance has also been curtailed and the purchase of new equipment has been severely restrained. As a result, the irrigation systems and the Program itself are in a poor state of repair and rapidly getting worse. Program field workers have inadequate safety gear, vehicles are cannibalized for spare parts, and certain repair and maintenance duties are neglected due to a lack of personnel and working equipment.

Program losses have slowed but are projected to accelerate in the coming years, brought on, in part, by the need to repair irrigation systems that suffer from years of sub-standard repair and maintenance by a Program struggling with too few employees and insufficient funding.

5.4.3 Chargeable Acreage per Program Employee

With the upward trend in chargeable, agricultural acreage and the downward trend in Program staffing levels, the demands placed on Program staff are steadily increasing. In 1998, the Program managed 271 agricultural acres for every employee it had. At the end of fiscal 2003 that number jumped to 419 agricultural acres per employee, an increase of 55%. Thus far in fiscal year 2004, the Program has significantly increased its amount of chargeable acres (+15.4 %) with the addition of the Honokaa-Paauilo Irrigation System in 2004 (see Figure 1). The total number of employees has also increased from 11.5 at the end of FY 2003 to its current 12 (includes 2 emergency hires making up for the 3 permanent hires that were lost in fiscal year 2004). Figure 3 shows the increase in chargeable agricultural acres per Program employee from 271 in FY 1998 to its current 465, an increase of 72% and an all time high.

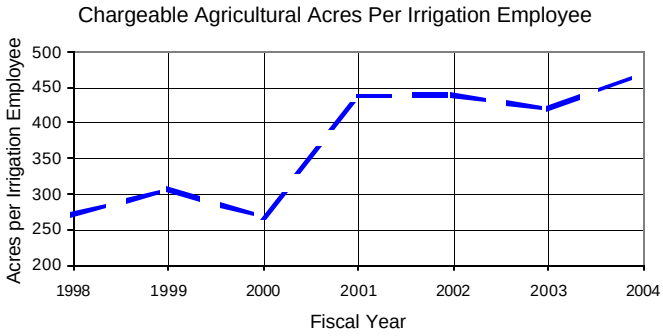


Figure 3. Chargeable agricultural acres per irrigation employee.

5.4.4 Revenue Delinquencies

The Program is responsible for administering the irrigation systems within its charge. This responsibility includes the billing and collection of acreage and water toll charges. Due to the decline in staffing levels, the Program was forced to centralize billing and collections from regional offices to its Honolulu office. This change, along with the significantly increased workload of Program employees, has decreased the level of interaction between the Program and its customers, which has led to an upward trend in the delinquency rate. Figure 4 shows a combined graph of the water toll delinquency rate as it relates to the Program staffing level. Note that in 1999, the delinquency rate was actually negative. In 1998, the Program experienced a 9% delinquency rate and refocused its efforts on collection activities. The negative delinquency rate in 1999 was caused by the effectiveness of the increased collection efforts as well as customer pre-payments. After the 38% loss in staff in 2001 (See Figure 2), the water toll delinquency rate steadily increased to its current level of 12.1%. With less staff in the field, collection and enforcement efforts are minimal, thus leading to higher delinquency rates.

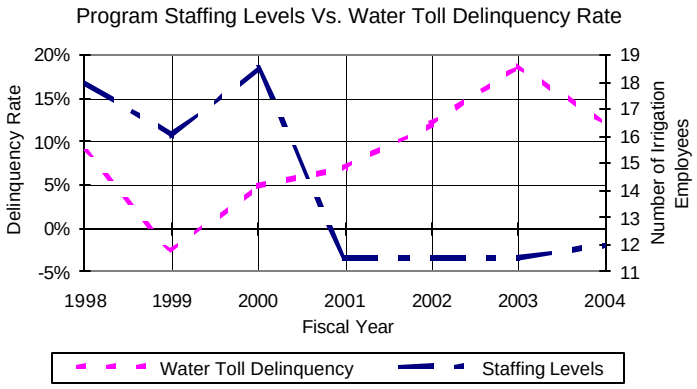


Figure 4. The delinquency rate for water tolls in relation to Program staffing levels.

5.5 Financial Stability

The State's ongoing fiscal uncertainties have prompted legislative evaluations of State programs, and reductions in general fund appropriations over the past several years. While these evaluations will continue for all State programs regardless of funding source, general funded programs will be at greatest risk. Since the Program has always relied on general funds to make up for perennial deficits, the Program is now at greater risk for actual catastrophic consequences caused by funding disruptions or shortfalls. The most likely of these consequences would include the shutdown of all irrigation systems and the layoff of Program employees. The operation and quality of the Program should not be inherently tied to the financial ability of the State to fund the Program. Nevertheless, the Program's general fund subsidy from the state is scheduled to end in the fiscal year 2005. Beyond fiscal year 2005, no general fund subsidies are guaranteed or expected for the program.

Furthermore, the mission of the Program is to promote agriculture in the State by providing reliable, reasonably priced, irrigation water to farmers. Without the financial stability of self-sufficiency, the Program is very close to failing the farmers of Hawaii. While it is highly desirable to have inexpensive irrigation water, it is even more desirable to have a reliable source of water, and thus the two pillars of the Program's mandate must be balanced. Having inexpensive water means little if the Program collapses financially and there is no water to sell.

5.6 Issues of Reasonable Costs – Alternative Water Sources

Without the Program to supply agricultural water, the agricultural water demand would fall on the respective municipal, county water systems. Comparisons with municipal water systems indicate that

county rates are significantly higher than DOA rates (see Appendix C). Contributing to these higher rates are treatments for higher water quality, or potability. The additional costs of these treatments do not necessarily contribute to "added value" for most farmers. Furthermore, the county's agricultural water rates are lower than the actual cost incurred to deliver the water because agricultural water users are being subsidized by the potable water users. Unfortunately, the Program does not have this ability.

6 Issues Against Rate Increases

6.1 Impact on Farmers

The primary opposing factor to increasing water rates is the adverse impact that higher production costs will have on the economic viability of small farmers. Rate hikes may negatively impact production costs, profit margins, and ultimately the economic sustainability of some farmers using DOA water. However, rate hikes may have a positive effect in the long-term. Rate hikes may cause a greater move towards agricultural efficiency and may cause under-performing agri-businesses to cease operations, thus providing opportunities for new entrants to agriculture and opportunities for successful operations to expand.

The specific impacts of rate hikes on farmers have not been determined due to the diversity of agricultural operations supported by DOA irrigation systems. However, if rates are increased too much, too quickly, the impact on smaller farmers will be significant.

6.2 Hurting Departmental Objective of Agricultural Growth

It is the primary goal of the DOA is to promote agricultural growth within the State. Raising water rates could deter farmers from expanding existing operations and discourage potential farmers from starting new agricultural ventures. Fortunately, even with the proposed water toll increases, the Program's water rates will remain, by far, the most affordable alternative for agricultural irrigation water.

Nevertheless, the Program overall is beneficial to the agricultural industry as it is doubtful that privatization would yield better service and cheaper water rates. Whether or not the Program exists now or in the future, the agricultural industry will still require irrigation water.

7 Water Rate Design Proposal

There are many factors that both support and oppose raising irrigation rates. The most significant issues supporting an increase are 1) the program will soon run out of operating funds if rates are not increased significantly, and 2) the revolving fund may be repealed if efforts to attain self-sufficiency do not continue. If either of these two consequences are realized, the Program will undoubtedly close. While important issues opposing an increase exist, the Program provides a vital service that would be extremely difficult to replace. For example, in regards to impacting farmers' production costs, if additional revenues are not generated and the program is subsequently cutback or terminated, farmers may be forced to pay substantially higher county water rates or lose the ability to irrigate altogether. Other mitigating factors, such as infrastructure limitations relating to water storage and delivery, are

being addressed through an ongoing program of capital improvements, as general obligation funds become available.

Attaining operating self-sufficiency, best addresses the tradeoffs between revenue adequacy and agricultural development. Spreading out required price increases over a number of years will give farmers time to adjust to realistic water cost pricing while allowing adequate time for the farmers to increase the efficiency of their operations.

The next step in the process is to establish an appropriate timeline for achieving self-sufficiency. The first goal is to establish a rate structure that generates sufficient revenue for the program to fund itself fully. The second objective is to stem the sizable losses of the program as quickly as possible while giving farmers time to adjust to the new pricing realities.

7.1 Basic Water Rate Increases

Our solution is a steady series of rate increases. In the first year of implementation (projected to be FY 2006), all water rates will initially be raised to a baseline amount of 40 cents per 1000 gallons of water. Water tolls for livestock will no longer be based on the number of livestock heads. Water tolls for livestock will be based on actual water consumed, like all other agricultural water users. This move will standardize all irrigation systems to the same water rate. For the next three years, the baseline water rate will increase by 6 cents per 1000 gallons annually. For years five and six, annual price increases will be 2 cents per 1000 gallons. For years seven and beyond, annual price increases will be up to 2 cents per 1000 gallons based upon the financial condition of the Program. Implementation of this rate structure will result in a self-sufficient Program in fiscal year 2011. See Appendix D for historical and projected operating net income for the Program under this water rate design proposal.

7.2 Additional Pumping Surcharge

Most irrigation systems use gravity to transport irrigation water from the mountains to reservoirs and customers. Other systems get their irrigation water from the ground, which requires pump maintenance and electricity to run the pumps. Operating pumps to retrieve irrigation water is significantly more expensive than a gravity-fed source. Therefore, a surcharge for system pumping shall be imposed for individual irrigation systems that require the use of pumps for more than four cumulative months out of the fiscal year. The surcharge will be five cents per 1000 gallons of irrigation water and will be imposed for the following, complete, fiscal year. Eligibility for this surcharge will be based on the previous year's usage.

7.3 Individual System - Volume Usage Discount

Individual irrigation systems can be eligible for a volume usage discount to take into account lower system costs through economies of scale. Therefore, any irrigation system that, as a whole, uses more than one billion gallons of irrigation water per fiscal year shall be eligible for a volume usage discount that will lower the system's water rate by five cents per 1000 gallons of irrigation water for the following fiscal year. Eligibility for this discount will be based on the previous year's usage.

7.4 Acreage Assessments

Acreage assessments are vital to provide a reasonable fixed revenue to meet the most basic financial needs of the Program. Since water toll revenue can fluctuate due to weather and other unforeseen events, acreage assessments need to be flexible to counteract unforeseen changes in the previous year's operation and maintenance expenditures. It is therefore proposed that all irrigations systems amend their acreage assessment policy to match that of Honokaa-Paauilo, which in part states,

"Acreage assessments are set for irrigation use pursuant to section 167-19, Hawaii Revised Statutes," (Section 4-156-21, paragraph 2, Hawaii Administrative Rules).

7.5 Justification for this Proposal

This proposal is designed to make the Program financially self-sufficient as intended by the creation of the irrigation system revolving fund. The proposal also creates more uniformity in water toll charges and assesses these charges in a more equitable way. In the first year of the proposal, all water toll charges are increased to an amount that is uniform across all irrigation systems.

Furthermore, surcharges were added to the baseline water toll charges to reflect cost differentials inherent to different irrigation systems. For instance, irrigation systems that require pumped ground water are more expensive to operate due to the high cost of electricity to run the pumps. To address these higher cost systems, a pumping surcharge was added to the proposal so that water users who get their water through pumps pay a slightly higher water toll rate that more accurately reflects the actual cost of delivering their water. Irrigation systems that require pumping for more than four months within a fiscal year will be assessed an additional per-1000-gallon surcharge in the next fiscal year and the assessment of eligibility for this surcharge will be retroactive. The goal is to be fairer to all program customers.

In contrast to a water toll surcharge, a water toll discount was also introduced in this proposal for the same reason of creating a rate system that is fair to all customers. The water toll discount applies to any individual irrigation system that consumes more than one billion gallons of chargeable irrigation water in a fiscal year. This discount reflects the savings created by economies of scale within a single irrigation system. One large system is cheaper to operate per 1000-gallons delivered than many separate smaller systems serving the same water amount in combination. To reflect these economies of scale savings, irrigation systems that qualify as high volume users in one fiscal year will receive a per 1000-gallon discount on their water toll charges throughout the next fiscal year. The assessment of eligibility for this discount will be applied to the following year's rate.

There are no requested rate increases for acreage assessments in this study. Instead, this study proposes only that all rules governing acreage assessments be uniform across all irrigation systems. The rules for acreage assessments at Honokaa-Paauilo are the standard for which this study proposes all irrigation systems adopt.

7.6 Other Considerations

The current state of the Program is very poor. Morale is declining, equipment is old, broken, or no longer operable, and there are too few employees to run the Program in an efficient, professional matter. Furthermore, the lack of adequate safety gear and proper equipment creates a significant legal liability for the Program and the State. The Program desperately needs more funds to service an increasing amount of customers. The current financial analysis shows that the current water toll rates and acreage assessments are insufficient to cover current costs. Thus, building the Program by adding more customers will only exacerbate an already precarious position. With an approval of this proposal, the Program will:

- Purchase new safety equipment and machinery necessary for employees to work safely and efficiently, and fulfill other immediate needs as outlined in Appendix B under "Immediate Expenses"

- Conduct a study specifically addressing the weakest parts of the Program with respect to operations and maintenance, customer service (i.e. repair crew response times, general administrative service and support, etc.), and back-office financial operations. Create and

execute a plan to strengthen the weakest parts of the Program, as determined in the study, to the benefit of Program customers and the State of Hawaii

- Implement an initiative to upgrade the use of technology to increase efficiency and provide better service (i.e., billing and administrative support).

8 Summary

The DOA's irrigation system program is meant to be financially self-sufficient. Unfortunately, due to the traditionally low rate structure, the Program has always had to rely on general fund subsidies from the state. For the past several years, due to the uncertain financial condition of the State, general fund subsidies to the Program have been reduced and are increasingly difficult to obtain. These reductions, in combination with continuously increasing program expenses, have forced dramatic cost reducing measures, including layoffs of program staff. These cuts have resulted in a systematic deterioration of the program, from customer service to repair and maintenance of the irrigation system infrastructure. Currently the Program is severely under funded and may be forced to shut down if sufficient revenue or funding is not received. To eliminate the need for recurring general fund subsidies and become self-sufficient in fiscal year 2011, the Program must be allowed to make the following changes to its administrative rules and pricing structure:

1. Create a single rate structure for all irrigation systems. Remove charges based on headcount for livestock and bill ranchers for actual water consumed. Adjust toll rates for individual irrigation systems by applying discounts and surcharges that reflect the differing costs associated with each individual system.

2. Adjust the application of acreage assessments such that their administration is consistent with the intent of the underlying statutes that require annual adjustments to the acreage assessments of each irrigation system.

3. Increase the baseline water toll rates to accurately reflect the actual cost of operating the irrigation system program. Spread the increase in water toll rates over a number of years in a set schedule to help farmers plan and adjust to new water toll rates.

4. Address critical operations and maintenance issues that have been continually suspended due to a lack of funding.

5. Implement operations and maintenance activities, including maintenance contracts for pumps and the Molokai high voltage electrical system, to operate all of the irrigation systems at sustainable levels.

Appendix A

Expected County and DOA Water Toll Rates for Program Irrigation Systems

Irrigation System	Fiscal Year 1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*
County Water Toll Rates (dollars per 1000 gallons)														
Kauai < 25,000					2.10									
Kauai > 25,000					0.70									
Honokaa-Paauilo					1.90	1.84	1.84	1.88						
Kahuku < 13,000						1.77	1.77	2.00	2.17	2.47				
Kahuku > 13,000						0.75	0.75	0.77	0.79	0.81				
Waimanalo < 13,000						1.77	1.77	2.00	2.17	2.47				
Waimanalo > 13,000						0.75	0.75	0.77	0.79	0.81				
Waimea					1.90	1.84	1.84	1.88						
Molokai		0.66	0.69	0.72	0.76	0.76	0.76	0.76						
DOA Water Toll Rates (dollars per 1000 gallons)								Annual increase:		0.06			0.02	
Honokaa-Paauilo			0.25	0.25	0.25	0.25	0.25	0.25	0.40	0.46	0.52	0.58	0.60	0.62
Kahuku	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.45	0.51	0.57	0.63	0.65	0.67
Waimanalo	0.160	0.160	0.215	0.235	0.255	0.275	0.295	0.315	0.40	0.46	0.52	0.58	0.60	0.62
Waimea	0.160	0.160	0.215	0.235	0.255	0.275	0.295	0.315	0.40	0.46	0.52	0.58	0.60	0.62
Molokai	0.160	0.160	0.215	0.235	0.255	0.275	0.295	0.315	0.40	0.46	0.52	0.58	0.60	0.62
										Proposed Water Rates				

* An increase of up to $0.02 per year is proposed after Fiscal Year 2009 based upon the financial condition of the Program.

Appendix B

DEPARTMENT OF AGRICULTURE

Projected Expenditures, Above Current Levels, Required To Properly Maintain Program Irrigation Systems

Rev. 2/17/04

	For All Irrigation Systems Within The Following Counties							
	Administration		Honolulu County		Maui County		Hawaii County	
Item Description	Immediate Expenses	Annual Expenses	Immediate Expenses	Annual Expenses	Immediate Expenses	Annual Expenses	Immediate Expenses	Annual Expenses
Pump Maintenance Contract			$25,000	$25,000	$36,000	$36,000	$6,000	$6,000
Vehicle Replacement			$60,000	$4,000	$30,000	$4,000	$30,000	$4,000
Equipment Acquisition (backhoe, chainsaw, misc. machinery)			$15,400	$700	$49,600	$700	$4,600	$700
Supplies: Meters, Piping, Const Matl, Herbicides, etc.			$25,735	$7,500	$14,500	$7,500	$36,000	$7,500
General Maintenance (i.e., fences, locks, etc.)			$7,000		$7,000		$7,000	
Increase in Electricity Costs (5%)				$1,010		$11,000		$600
Increase in Fuel Costs (7%)				$400		$400		$300
Upgrade of Branch Office Computers & Office Eqpt.			$2,000	$1,000	$2,000	$1,000	$2,000	$1,000
Upgrade SCADA/Telemetry System			N/A		CIP		N/A	
Personnel Counts:								
Irrigation Supervisor (F107)			[1]				[1]	
-Irrigation Svc. Worker II (BC07) [2 each]							[2]	
-Irrigation Service Worker I (BC05)			$36,207	$36,207		$36,207		
-Reclass BC 07's to BC 09's								$4,189
-Reclass BC 05's to BC 07's								$3,062
Collective Bargaining-Current Pos.			$2,800	$1,400	$3,100	$1,550	$3,100	$1,550
Collective Bargaining-Projected Pos.		$458		$1,656		$724		$724
Training				$2,000		$1,000		$1,000
TOTALS	$0	$458	$174,142	$80,873	$142,200	$100,081	$88,700	$30,625

Total Projected Immediate Expenses	$405,042
Total Projected Annual Expenses	$212,037

NOTE: [1] =Position classification to be reviewed, [2] = Proposed current re-organization

Appendix C

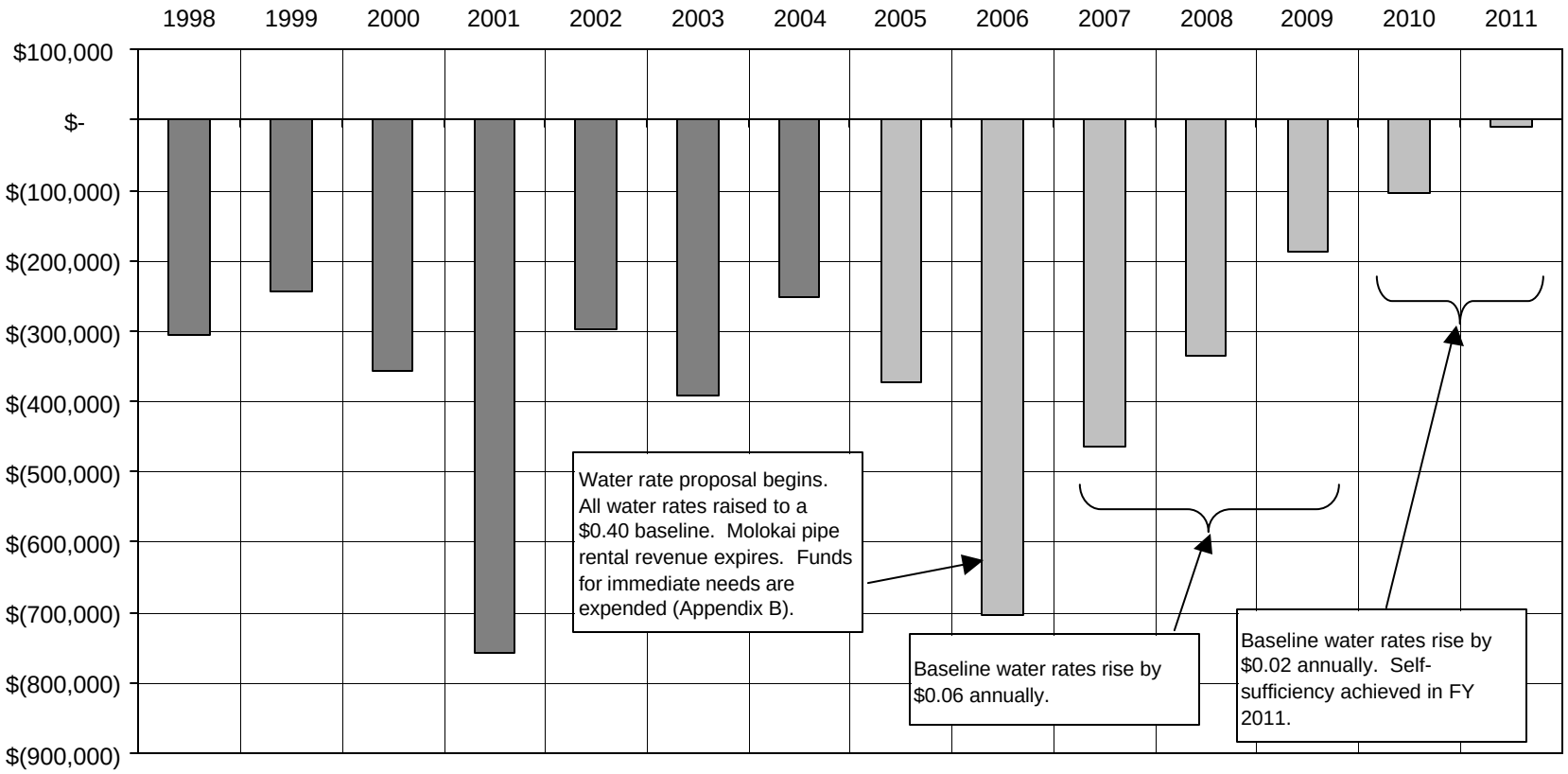
Comparative Water Toll Rates Between DOA and Counties

Dollars per 1000 gallons as of July 2004

Irrigation System	Monthly Consumption Less Than 13,000 Gallons	Monthly Consumption Greater Than 13,000 Gallons
Honokaa-Paauilo, Hawaii County	$ 1.88	$ 1.88
Honokaa-Paauilo, Irrigation Program	$ 0.25	$ 0.25
Kahuku, Honolulu County Non-potable	$ 2.00	$ 0.77
Kahuku, Irrigation Program	$ 0.32	$ 0.32
Waimanalo, Honolulu County Non-potable	$ 2.00	$ 0.77
Waimanalo, Irrigation Program	$ 0.315	$ 0.315
Waimea, Hawaii County	$ 1.88	$ 1.88
Waimea, Irrigation Program	$ 0.315	$ 0.315
Molokai, Maui County	$ 0.76	$ 0.76
Molokai, Irrigation Program	$ 0.315	$ 0.315

Appendix D

Irrigation System Operating Net Income



Note: The 2001 loss is large because it includes an O&M pre-payment for Lower Hamakua Ditch that should actually accrue in FY 2002. The pre-payment is for $240,000 and shows up in 141-0011 under object 7107.